[001] This patent stems from a continuation-in-part patent application of U.S. patent application serial no. 09/181,724, filed November 29, 1998 entitled MATCHED-FILTER BASED HANDOFF METHOD AND APPARATUS, now U.S. patent no. 6,215,811, which is a continuation application of U.S. patent application serial no. 08/638,394, filed April 29, 1996, entitled MATCHED FILTER-BASED HANDOFF METHOD AND APPARATUS, now U.S. patent no. 5,864,578. The benefit of the earlier filing dates of the parent patent applications are claimed for common subject matter pursuant to 35 U.S.C. § 120.

D1

[002] FIG. 24 is a block diagram of a receiver and transmitter for handoff for a base station or a remote station;

D2

[003] FIG. 26 is a timing diagram for the handoff process using a higher symbol rate.

D3

[004] The BS spread-spectrum transmitter and the BS spread-spectrum receiver are located at the base station 31. The BS spread-spectrum receiver includes an antenna 309 coupled to a circulator 310, a receiver radio frequency (RF) section 311, a local oscillator 313, a quadrature demodulator 312, and an analog-to-digital converter 314. The receiver RF section 311 is coupled between the circulator 310 and the quadrature demodulator 312. The quadrature demodulator is coupled to the local oscillator 313 and to the analog to digital converter 314.

D4 CONT

LAW OFFICES
DAVID NEWMAN
CHARTERED
CENTENNIAL SQUARE
P.O. BOX 2728
LA PLATA, MD 20646
(301) 934-6100

D

D4 cont.

The output of the analog-to-digital converter 314 is coupled to a programmable-matched filter 315.

D5

[005] Similarly, the queued BS data are transmitted at a second BS data rate from the target-base station to the remote station. The queued BS data are transferred at a second BS data rate. The second BS data rate is greater than the first BS data rate. The second BS data rate and second RS data rate may be greater than the first BS data rate and the first RS data rate, respectively, due to sending packets at a higher data rate, or due to using parallel spread-spectrum channels, to effectively realize a faster data rate.

LAW OFFICES
DAVID NEWMAN
CHARTERED
CENTENNIAL SQUARE
P.O. BOX 2728
LA PLATA, MD 20646
(301) 934-6100

61

D

1. In a spread-spectrum-communications system having a plurality of base stations and a remote station (RS), with the remote station communicating with a source-base station (BS) using spread-spectrum modulation, with the remote station transmitting data to the source-base station at a first BS data rate and a first BS power level, a method comprising the steps of:

monitoring, at the remote station, a first signal quality of the first received-spread-spectrum signal;

scanning, at said remote station, a plurality of received-spread-spectrum signals radiated from the plurality of base stations, respectively;

storing, at said remote station, a plurality of signal qualities for the plurality of received-spread-spectrum signals, respectively;

selecting, from the plurality of received-spread-spectrum signals, at said remote station, using the plurality of signal qualities from the plurality of received-spread-spectrum signals, a second received-spread-spectrum signal having a second signal quality transmitted from a target-base station;

initiating, from said remote station, upon the first signal quality falling below any of a predetermined handoff threshold, a handoff process;

transmitting, from said remote station, an RS-access-burst signal having a plurality of RS segments, with each RS segment having a plurality of RS symbols carrying differentially

LAW OFFICES
DAVID NEWMAN
CHARTERED
CENTENNIAL SQUARE
P.O. BOX 2728
LA PLATA, MD 20646
(301) 934-6100

encoded BS power-control information, with the plurality of RS segments having a plurality of RS power levels, increasing in time, respectively;

queuing, upon requesting the handoff process to the target-base station, RS data for transmission from said remote station;

receiving, at said target-base station, the RS-access-burst signal at an RS detected-power level;

transmitting from said target-base station a BS-access-burst signal having a plurality of BS segments, with each BS segment having a plurality of BS symbols carrying differentially encoded RS power-control information, with the plurality of BS segments having a plurality of BS power levels, increasing in time, respectively;

differentially encoding, responsive to detecting the BS-access-burst signal, the plurality of RS symbols with BS-power control information including power level for said target-base station;

differentially encoding, responsive to detecting the RS-access-burst signal, the plurality of BS symbols with RS-power control information including power level for said remote station;

receiving at said remote station, the BS-access-burst signal from said target-base station;

receiving at said target-base station, the RS-access-

LAW OFFICES
DAVID NEWMAN
CHARTERED
CENTENNIAL SQUARE
P.O. BOX 2728
LA PLATA, MD 20646
(301) 934-6100

burst signal from said remote station;

transmitting, from said remote station to said target-base station, the queued RS data at a second RS data rate, with the second RS data rate greater than a first RS data rate, thereby transferring the queued RS data to said target-base station;

transmitting, from said target-base station to said remote station, the queued BS data at a second BS data rate, with the second BS data rate greater than the first BS data rate, thereby transferring the queued BS data to said remote station;

transmitting, from said remote station to said target-base station, responsive to the queued RS data being transferred to the target-base station, at the first RS data rate; and

transmitting, from said target-base station to said remote station, responsive to the queued BS data being transferred to said remote station, at the first BS data rate.

LAW OFFICES
DAVID NEWMAN
CHARTERED
CENTENNIAL SQUARE
P.O. BOX 2728
LA PLATA, MD 20646
(301) 934-6100